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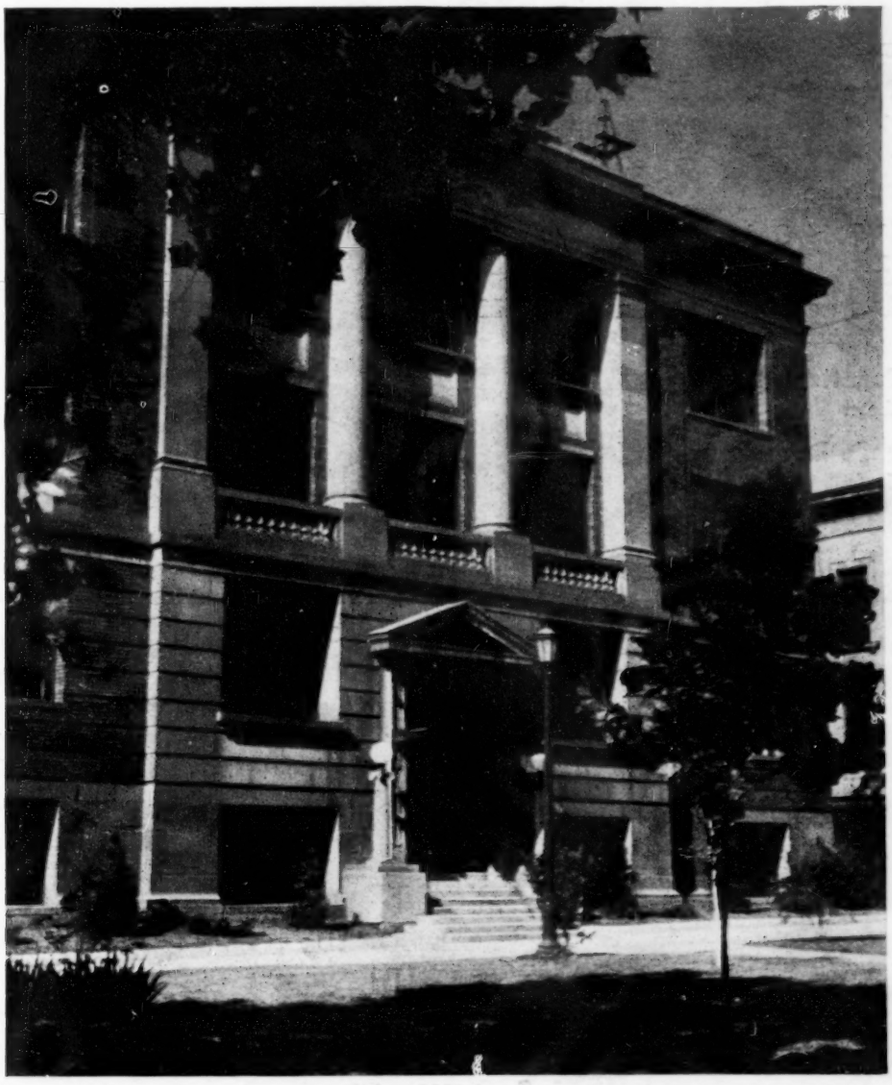

VOLUME XVI NOVEMBER, 1944 NUMBER 2

Indiana State Teachers College
Terre Haute, Indiana

THE TEACHERS COLLEGE JOURNAL

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THE NOVEMBER COVER

From the beginning, Indiana State has been proud of its Department of Science. It is in tribute to the past performances and future plans of this department that the November JOURNAL features articles written by the members of the science faculty. The cover picture is a front view of Science Hall.

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A History of the Department of Science - - - An Introduction

The Department of Science of Indiana State Teachers College is as old as the school itself. When the school was organized in 1870, President Jones and the other members of the faculty became conscious at once that certain instruction in science for the preparation of teachers was necessary. We find, therefore, in some of the school documents that a Professor Bosworth was engaged to teach geography in the Normal School. Inasmuch as all the instruction in the Normal School at that time was aimed at preparing teachers for the elementary schools of the state, there was no particular attention given to instruction in the natural sciences as we know them today. It was not long, however, until we find Professor Jacob T. Scovell taking over the work as instructor in science in 1874, and we find such courses as elementary instruction in biology, geography, and physics indicated. In 1877, Cyrus W. Hodgin was elected to the faculty as instructor in geography, and in 1878, S. S. Parr replaced Mr. Hodgin as instructor in geography.

During the first ten years of the school's existence there was quite a bit of agitation among the students and the faculty looking forward to an expansion of the curriculum to include instruction in fields which would prepare teachers to take their places in the secondary schools of the state. When President Jones retired and President Brown took over the reins of government of the school, we find Eli F. Brown coming to the faculty as professor of science in 1880. He was followed by Michael Seiler as teacher of geography in 1882. Perhaps the first great teacher of science in the Normal School was Oliver P. Jenkins, who came on the faculty in 1885 under the administration of the new president, William Wood Parsons. The influence of Professor Jenkins upon the Department of Science was lasting, and we still hear some of the older members of the faculty and members of the alumni speak of his excellent teaching.

Professor Jenkins did not stay with the school very long, but left in 1887 to take up a professorship at DePauw University, and later he was chosen by President David Starr Jordan to go with him to Leland Stanford University of California when this famous school was organized by Dr. Jordan toward the end of the century. When Professor Jenkins left the school he was succeeded by another eminent scientist who was later to become world famous. This man was Professor Barton W. Evermann, who remained as head of the Department of Science until 1891, when he was appointed Chief of the Division of Scientific Inquiry of the United States Fish Commission in Washington, D. C.

In 1888, the Department of Science was divided. Dr. Evermann took over the work in biology and physiology, and Professor Robert G. Gillum, who had come to the faculty in 1887, was appointed in charge of physics and chemistry. In 1900, the department of biology was again divided, and we find Dr. L. J. Rettger, who came to the faculty in 1892, in charge of physiology, and Professor U. O. Cox, who made his initial appearance on the faculty in 1899, became professor of animal and plant biology. Another famous scientist became associated with the college in 1892. This was Dr. W. J. Moenkhous. Dr. Moenkhous later became head of the department of physiology at Indiana University and remained there in that capacity until his retirement a few years ago. In 1894, Professor Charles R. Dryer came to the faculty as professor of geography, and Professor Seiler, who had been teaching geography since 1882 was transferred to the department of German. Professor Dryer is well known for his contributions in geography and for his scholarly addresses before the Normal School faculty and student body. The same might be said for Dr. Rettger and many of the former members of the science faculty.

Just before the turn of the century, Professor W. A. McBeth became associated with the science faculty as assistant professor of geography and geology, and Professor Edwin M. Bruce came in as assistant professor of physics and chemistry. Shortly after the turn of the century, the department of physics and chemistry was again divided, Professor Gillum retaining the work in physics and Professor Bruce taking over the department of chemistry. Shortly after this, Professor Charles R. Dryer retired, and Professor B. H. Shockel was brought in as head of the department of geography and geology.

In 1917, the new Science Building

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Murals of Fred Donaghy, by Gilbert Wilson, in the main hall of the Science Building.

The Role of Physics in Education

J. F. Mackell

Mr. Mackell is chairman of the Department of Science and Professor of Physics at Indiana State Teachers College. Mr. Mackell also wrote the introductory article to this issue of the JOURNAL.

If there was ever any question in the minds of educational leaders about the desirability of including instruction in physics in the public schools, that question has resolved itself during the past few years since the nation has been engaged in an all-out war effort. Long before Pearl Harbor the military leaders of the world were saying that the new world war which seemed inevitable was going to be a physicist's war. The Axis powers were using blitz methods based upon technological advances which had their origins in researches in physics and the engineering sciences. Thanks to Radar, the daring "few" of the R. A. F. were enabled to save Great Britain and give the rest of the world time to assemble an adequate defense and finally an invincible attack on "Hitler's Europe."

From the very beginning, our present war effort has been built around technological advances which have had their origins in the main in the research laboratories of the physical sciences. The War and Navy departments recognized the importance of physics instruction for their personnel and took immediate steps to underwrite instruction in the physical sciences in the schools and colleges of the country. A register of scientific personnel was drawn up and the universities and colleges were soon drained of research workers, professors, and graduate students in the physical sciences. Anyone who had any training in the physical sciences, especially physics, could find a place in the war program. The physicist has been having a field day.

Shortly after Pearl Harbor, the several state departments of education in the United States initiated a program of accelerated courses in physics in the public high schools of the United States. This program, which was pushed vigorously in Indiana, resulted in a considerable increase in the enrollment in physics classes in the high schools, and it was soon apparent that one of the most serious problems confronting school administrators was that of finding enough teachers to man the program. The shortage of well-trained physics teachers still persists and is likely to continue for many years. The public schools and the public generally are physics conscious and we may look for an ever-increasing demand for physics instruction in our public schools.

Indiana State has seen a remarkable growth in the number of students enrolled in physics classes during the past three years. Even before the inauguration of the Navy V-12 program, the Department had noticed a pick-up in interest in physics by civilian students who saw the "handwriting on the wall." In addition to a growth in interest among civilian students, there came the C. P. T. program for the training of aviation cadets and naturally, this program called for training in basic physics. Finally the V-12 program, which prescribes physics for all the trainees, has turned fifty per cent of Science Hall into a physics laboratory.

Of course it is well recognized that with the coming of peace some of this over emphasis on physics will give way to a more balanced program of science instruction, but there is little doubt that interest in physics and in science generally will be greatly enhanced in the educational program of the future. When the nations of the world have laid aside their implements and plans for destruction, they will be faced with the greater problems of reconstruction, and it will be found that science and especially the physical sciences will be called upon to point the way to rebuilding the cities, roads, industries, and even the morale which only yesterday they were asked to destroy.

Indiana State has for its primary function the training of teachers for the public schools, but she is being called upon more and more to assume other functions such as training for social work, the technical professions, public health services, and nursing, to say nothing of serving a large area as a liberal arts college. In all these capacities the College and the Department of Science expects physics instruction to assume a leading role.

We must remember that G. I. Joe is going to have a lot to say about the world of tomorrow. He is learning from experience about all kinds of gadgets which are the products of technological research the world over. He is going to have some pretty definite ideas about the kind of education he expects his children to have in the public schools of the future. It is quite likely that he will expect something better for his children than was his lot. A school curriculum that

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Professor Mackell observing sailors conducting experiments in physics.

Botany as a Subject Field in Education

Ben H. Smith

Mr. Smith is Professor of Botany at Indiana State Teachers College.

The question may have been asked often concerning the place of botany in war times and also in the postwar period. It takes no great stretch of the imagination for one to realize that battles in the air, on sea, and on land are not fought with plants as such, but with lead, steel, machines, guns, etc., all of a mechanical nature, except the soldiers who man them. It is therefore rather easy to see the place occupied, and rightly so, by such subjects as mathematics, physics, and engineering in modern world struggles for existence.

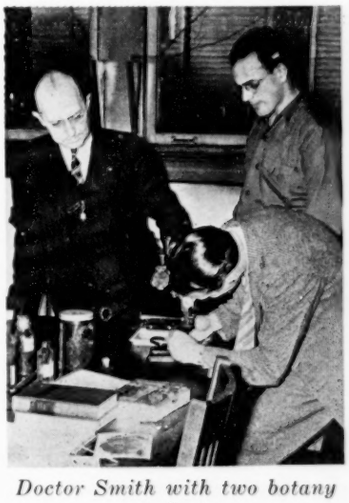
But, no matter how important these mechanized units of destruction are, they must be controlled and operated by man, and man must have supplies not only for his machines but for himself as well. The supplies for man are food, clothing, and medicines, without adequate amounts of which no army can long maintain itself in superiority over its enemy.

What is botany? Botany is that science which treats of plant life. It is a study of the structures and functions of plants, their relationships to their environment, to one another, and with the animal kingdom.

How important is this "thing" known as a plant? It takes on significance when we realize that every animal, large or small, is in some way dependent upon plants every hour of its life. Man and all other animals use and depend upon plants directly as food or indirectly because they eat other animals that feed upon plants.

Furthermore, what are the main sources of light, heat, electricity, and mechanical energy? It must be from the burning of wood, coal, petroleum, and gas, all of which are plant derivatives and are the result of the liberation of chemically bound energy stored up during plant life processes. Therefore it would seem that food and chemically bound energy, two plant products, are indispensable, not to one but to all living things.

The study of plants has also contributed to our better understanding of the enzymes, hormones, and the vitamins. In spite of the fact that we look to cod liver oil and other sources for vitamins, it should be remembered that the vitamins, or their precursors, are made largely by plants and that they accumulate in certain animal organs, tissues, or products because these naimals have fed on plants in which the vitamins were made.



Doctor Smith with two botany students.

Another phase of botanical science is that of bacteriology. What are bacteria? These tiny organisms are plants, fungous plants, which belong to a group known as Schizomycetes which means fission-fungi. These tiny organisms play an important role in everyday life. How can we say he has a well-rounded education who remains wholly uninformed concerning these organisms? It is true that bacteriology has been tied up rather intimately with medical science or medical learning and not without justification since their relationship to human diseases touches us all very closely. But when we know that out of some 122 genera of bacteria only a dozen or so are of medical significance, we wonder as to the importance of the vast number of others. It is in this latter group, the group of vast numbers, the group which is non-pathogenic, or non-disease-producing, that the students of engineering, chemistry, physiology, agriculture, industrial processes, and botany find many bacteria of immense practical importance and value. To mention only a few, there are the bacteria of vinegar, of alcohol manufacture, bacteria of ensilage, sauerkraut, "sweating" tobacco, coffee, coca, rubber, tanning, and dairy products.

Turning now to another phase of botany, perhaps no story in this field has had a higher dramatic interest than that of the discovery of the laws of heredity by Gregor Johann Mendel. Mendel was an Augustinian monk at Brunn in Moravia. It was Mendel's experiments in crossing edible peas, an experiment he caried on for eight years and reported before the Brunn Society in 1865 and published in 1866, that gave us the laws of heredity, now known as Mendel's Laws, and upon which the science of heredity had its beginnings about the turn of the twentieth century. We have made great strides in studies of heredity not only in plants, but in domesticated animals and man himself. Much is yet to be known concerning heredity and its behavior, but if we, as human beings, would use what we now know to be facts, much human distress and wretchedness could be kept from increasing from generation to generation. The study of plant heredity has given us, to list only a few, hybrid corn, improved potatoes, tomatoes, peas, beans, wheat, etc., and in the

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Zoology

W. P. Allyn

Mr. Allyn is Professor of Zoology at Indiana State Teachers College.

The subject of zoology or animal biology deals primarily with organic laws and principles by which animal life is sustained. Man himself is an animal of the highest order, yet as such is subject to much the same organic and physical laws as the other members of the animal kingdom. The final objective of man, in fact of all living entities, is to solve the problems of living, to deal successfully with the natural enemies, to perpetuate and distribute his own kind, and to extract a fair share of the material proceeds of the world necessary for sustenance and existence. It naturally follows that the subject of zoology, in its last analysis, pivots about the problems and existence of man.

An attempt is made at Indiana State to strike a very liberal compromise between the point of view of the strictly technical scientist and that of the naturalist. Basic technical zoological science is stressed sufficiently to enable a student to major in the field of zoology and to complete preparatory work for graduate study, if he so desires. At the same time, other courses are organized to carry out the point of view of the naturalist. Care is taken in the latter case, however, to keep subject matter on a high plane and within bounds of scientific truth but to sacrifice some of the more technical aspects of this subject in favor of material with more humane interest.

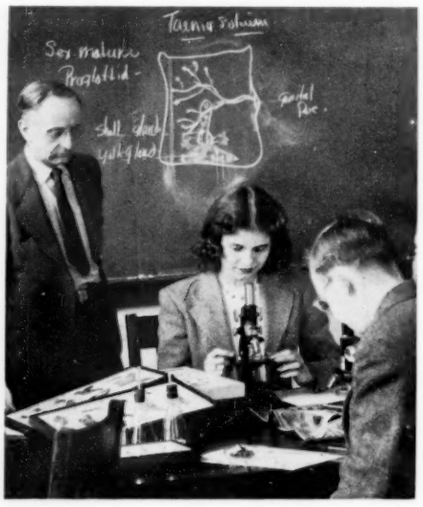
The problem of teacher training is kept in mind constantly, yet standard courses are scheduled regularly which complete the necessary preparation in the field for premedicine and predentistry. It is needless to state that these courses are accepted by standard schools of medicine and dentistry throughout the country.

The tendency on the part of human beings is to know more about everything else than they know about themselves. This may help to explain why misinformation and quackery, in so many disguises, flourish throughout the country.

Perhaps we as educators share that responsibility. Relatively not much time and effort are spent with the general fundamental principles which serve as the physical basis of life itself.

The introductive course in animal biology is designed to cover a rather broad comprehensive study of general life phenomena. Such topics as the characteristics which differentiate living from non-living things, the cell as a physical and functional unit of protoplasm, cell division, the various forms of reproduction by which animal species perpetuate their kinds, food getting and digestion, respiration, methods of distribution over the earth's surface, and the like, give some idea of the general yet fundamental nature of this initial approach in the field.

The introductory course is followed by a systematic survey of the animals



Professor Allyn instructing two students in the use of microscopes.

without backbones — the invertebrate animals. Special attention is given comparative anatomy and physiology of various groups ranging from the single-celled animals up to and including the more complex forms. Superficially these various groups of animals differ radically, but basically, their life problems remain the same. Man is no exception to the rule. The study of these simpler animals serves a very definite purpose in understanding the functions of the higher animals, animals that solve similar problems but with more complex mechanisms. They make use of entirely new organic principles, however.

Many of the simpler animals such as the protozoa, round worms, and flat worms (tapeworms and flukes) are typical human parasites and their importance should be properly emphasized. Moreover, the problem of human parasites will be augmented to major proportions as an aftermath of the war. Many new forms are now being introduced into this country by our soldiers returning from the infested areas all over the world.

Man is included in the group of vertebrate animals. This group naturally receives special attention. A rather comprehensive survey is made of the comparative biology of the vertebrate animals with special emphasis on mammalian anatomy. A typical mammal, comparable to man himself, is selected for dissection and rather detailed study. It is believed that the information sought in this study is almost indispensable to all higher education. It should enable the student to acquire much desired information about the plan of organization of his own body, with which he must live during his natural life.

The world's population of insects, even in time of war, remains the public enemy number one. Insects are the greatest competitors of man for the necessities and even the pleasures of life. The devastating work of these little beasts includes the destruction of our homes, clothing, and many valuable household furnishings. Moreover, insects in every stage of production attack foodstuffs of all kinds.

Most of all, a number of these creatures are both passive and active carriers of many killing diseases of man. It is generally recognized by health authorities that more than fifty per cent of all sickness in the world can be attributed to diseases carried by a single member of this group — the mosquito.

The destructive role of insects should command our earnest attention and it is believed, any well balanced educational program should include a general course, at least, in entomology.

Some courses of a more technical nature are added to the program in zoology for the students who desire to go further in the field. Histology and microtechnique consists of the preparation of microscopic study of representative mammalian tissues. It is recognized that all physiology and bodily functions finally are explained in terms of the composite function of the microscopic units of living tissue.

Embryology, the study of the development of the individual from a single cell through all of the stages of growth and differentiation into a fully formed entity, should be invaluable as an aid in understanding life itself. It is difficult to understand where intimate contacts with the principles and developmental processes of life can be made more intelligently than in the laboratory where the unfolding of these life phenomena are observed at first hand.

The subject or ornithology (bird study), field zoology, protozoology, and endocrinology help to complete a rather comprehensive survey of the field of zoology.

Let it be repeated that the sum total of mans efforts, which include the overall objective of education, is to solve the problems of living, to perpetuate the species, and to make the world a more pleasant and fitting place in which to live. With this goal in mind, it would appear that biology, the study of those organic principles by which life is sustained, should command a respectable place in a broad rational program of education.

The Division of Physiology and Hygiene

Bessie Noyes

Miss Noyes is Professor of Physiology at Indiana State Teachers College.

The present war has brought to the foreground again, just as World War I did years ago, the necessity for a strong body, steady nerves, and a keen mind in any situation demanding endurance and constant alertness. Teachers in the modern classroom have need of these same qualities in the daily struggle against disinclination, inattention, repetition, and the many other distracting influences surrounding modern education.

At Indiana State, the Division of Physiology and Hygiene has attempted to plan its course offering around the core idea of aiding the prospective teacher in understanding the build of his body, its working plan, and its intelligent care so that he may maintain it at its best functioning level.

An elementary course in human anatomy offers an opportunity to become familiar with the various organ systems of the body and the location and nature of the principal organs. The use of many charts, models, and some skeletal material adds to the interest of the course. The functioning of the human body is illustrated by studying, at first hand, similar processes in properly prepared animals which may be brought into the laboratory. Special attention is given in this course to the normal composition of the blood, the normal action of the heart and kidneys, and the normal digestive processes. Abnormal conditions are discussed briefly when special interest is evidenced. In personal hygiene the student is acquainted with the accepted modern practices of routine care of the body to preserve its best performance. Fads and fallacies of various cults are discussed and the exaggerated claims of special

Doctor Noyes scans an interestng slide.

advertising over the radio and in various magazines and newspapers are appraised.

Because of the relation of bacteria to many diseased states of the body, a course in bacteriology has been offered in this division. A study of the general nature of bacteria and the conditions necessary for their growth gives a basis for the understanding of the spread of bacterial disease. This information also aids in comprehending the measures necessary for the preservation of foods, the purification of water, and many of the other protective processes of a modern civilization. Laboratory work to familiarize the student with the various techniques for studying minute organisms forms part of the course. Immunology as a health safeguard is emphasized.

To stimulate civic consciousness

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Chemistry

Paul D. Wilkinson

Mr. Wilkinson is Professor of Chemistry at Indiana State Teachers College.

A national radio program has for its slogan "Better things for better living through chemistry." Ever since man first came upon this earth he has been surrounded by a chemical environment, and it has been his continuous aim to modify this environment to his advantage. For ages the endeavor was more or less haphazard. As one looks back he realizes that the acquired knowledge of the composition of things reached the point about one hundred and fifty years ago when he could say the science of chemistry was born. In the infancy of this science, progress was very slow until about the beginning of the present century, when chemistry was reaching out and affecting everything that stimulates the five senses.

A mere enumeration of the contributions of chemistry to our life would require many volumes. It is the purpose of this article to call attention to the broad aspects of the science and in so doing to arouse in the mind of the reader an appreciation of the cultural as well as the scientific value of chemistry in this age. During this period everything with which one comes in contact has been influenced by chemistry. As the science has grown it has become a part of and has adopted parts of other sciences. There was a time when the biologist would not speak to the chemist, the physicist would barely nod, and the mathematician did not know he existed. But that is all changed today.

The field of bio-chemistry is one of the most fruitful fields we have. Our knowledge of proteins, vitamins, hormones, and enzymes has lengthened the life span, increased the average height, and through better health made us much happier. We now buy thirty- to forty-year instead of fifteen- to twenty-year insurance policies. In the field of antiseptics, the sulfa drugs alone have saved many thousands of lives in the few short years they have been known. The infant penicillin may lead us to the ideal antiseptic — the one that will destroy all bacteria and not affect normal living cells of the body.

War is indeed unfortunate, but it was under the stimulus of World War I that the United States developed its chemical industry and became a world power in that field. Without our present knowledge of chemistry it would not be possible to fight the current war to a successful conclusion.

What will be the influence of the present war on our life? Many advances and contributions to the field of chemistry have been made that will be kept in the strictest secrecy until the war with Japan is over. Some of these contributions are probably beyond our wildest dreams. When they are released we will probably take them as a matter of course, as our rightful inheritance. However, a number of contributions to the field of chemical knowledge are at the present known but are not available to us as yet. Some products obtainable in very limited quantities in prewar years have proven so valuable that we have increased our manufacturing facilities and hence lowered costs to such an extent that they will be available to everybody after the war. Synthetic rubber is an example.

It is entirely possible that the postwar car will come equipped with engineered tires made from various synthetics as well as natural rubber that will be puncture-proof and will last the life of the car. The car itself, thanks to the light but strong alloys of magnesium and aluminum, will be much lighter but sturdier and will travel many more miles per gallon.

The shortage of tin has led to researches for substitutes. Our tooth paste tubes may be made of plastics, which will also coat our cans, if they are not made of glass.

The public used to think of many of our synthetic fibers as substitutes for silk, wool, and cotton. These synthetics have been so improved that after the war they will be sold under their own names and need bow to no natural product. They will have characteristics that will make them superior in many ways to nature's products. Even the natural fibers will be so water-proofed, fire-proofed, wrinkle-proofed and moth-proofed that we will hardly recognize them.

Vast contributions are expected in the field of agriculture. Nitrogen in the combined form is necessary for the manufacture of explosives. It is also necessary in fertilizers. If even a small percentage of our war production is turned to fertilizers at the reduced cost now possible, the farmer will be able to get yields that he would think fantastic at the present time. Chemical modifications of varieties of plants, seedless fruits, growth acceleration,

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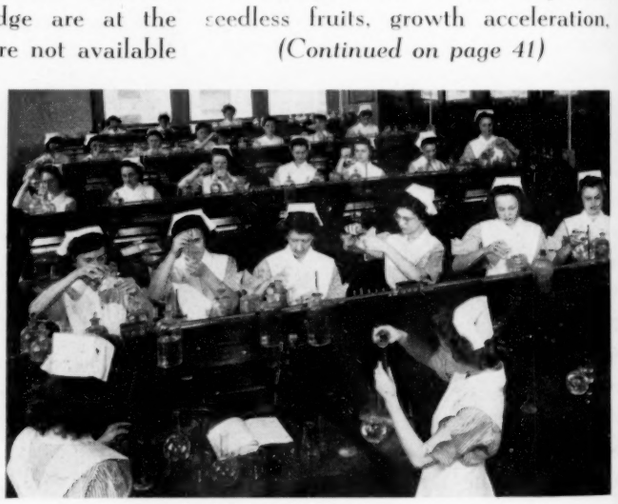


Nurses sent to Indiana State for instruction in Chemistry.

Geography and World Order

G. David Koch

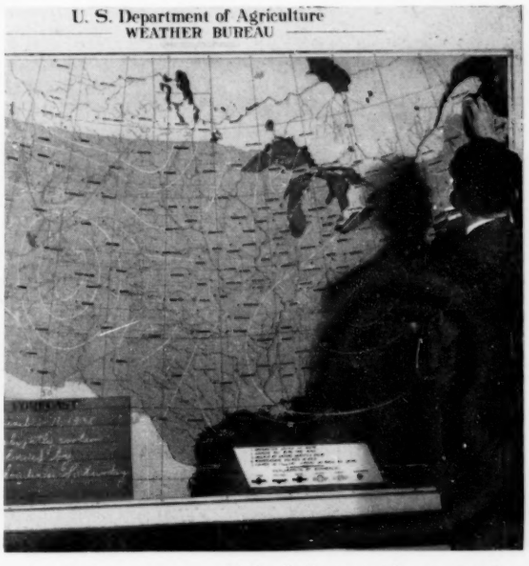
Mr. Koch is Assistant Professor of Geography and Geology at Indiana State Teachers College.

On December 7, 1941, America discovered geography. Since that fateful Sunday three years ago a renewed interest has developed in the study of geography. Our newspapers are offering daily spectacular lessons of a geographical nature. Almost every home in the United States has a special interest in places heretofore wholly unknown. A son, daughter, or father stationed in the Solomons, Dutch Harbor, Sardinia, or fighting in the Kuril Islands, northern France, or Burma, has brought into the limelight these remote foreign stations. As talk of the end of the war and peace creeps into the news, we are beginning to realize that hopes of a "just peace" and stable "world order" are securely bound up with geographical factors.

Together with a renewed interest in geography as a nation, there is now underway a widespread movement for the reintroduction of geography into the secondary schools. Courses of study and work programs are being arranged to meet the special demands and capacities of teachers and prospective teachers in the geographic field.

The inclusion of geography courses in the secondary-school curriculum, and taught by teachers specially trained in that area, is timely and of paramount importance. Data compiled from 502 students enrolled in the introductory geography course at Indiana State during the past five years indicate that only 27 per cent had received any instruction in geography during their secondary-school training. Informal questioning of those students who had taken geography in high school further revealed that the courses were limited to physical or economic-commercial geography. In most cases, the subjects were taught by the athletic coach, the principal, or some other instructor who was wholly untrained in geography and who quite likely professed little or no knowledge of the subject.

The revelation just cited is, of course, hardly peculiar to Indiana. During the past two years educators over the country as a whole have been startled to learn that the American people are geographically illiterate. The discovery occurred when the Army drew up contracts with colleges and universities throughout the nation in order to give special training to many thousands of young army inductees. In most of its courses, the Army included specific training in various phases of geography. The geographic requirement presented more than one college president with a unique and embarrassing problem. Many discovered they had no instructors on their faculties trained to teach geography on the college level. Still worse, few of them knew where they could secure qualified instructors. Many of them didn't! Instructors of geology, history, economics, physics, and, in one case at least, a minister of the gospel, were thrown into the breech. Whether the army trainees received good geographic training from these instructors is open to question. However, we may suppose that most of the inductees and certainly the college administrators came to the realization that geography is an adult and significant curriculum offering. The army trainees learned that ability to read a contour map — or draw one — is a desirable asset. They learned, as more and more people are learning, that land forms, climate, location, and natural resources have definite significance in world problems.



A glass map on which daily weather reports are recorded by geography students.

Further evidence of lack of adequate training in geography has come to light through place tests which have been given to students enrolled in the introductory course in geography here at Indiana State. This test requires the students to locate the states of the United States on an unlettered map. Of 318 students who have taken the test, only four per cent located correctly all the states. Forty-four per cent incorrectly placed ten states while twenty-seven per cent failed to locate correctly over one half the states. At the beginning of the last July Naval Term, a test similar in nature, but dealing with places of prominence in the Pacific theater of war, was given to 63 students enrolled in introductory geography courses. One student made a perfect score; 21, or thirty-four per cent, incorrectly placed ten or more locations, while the same per cent failed to locate correctly over one half the places. These figures indicate a definite lack of awareness to one of the significant factors of global geography and present-day problems.

I am frequently addressed with such queries as: "Is geography moving fast enough for you?" "How can you teach geography with such rapid changes taking place in the world?" These well-meant questions and others of a

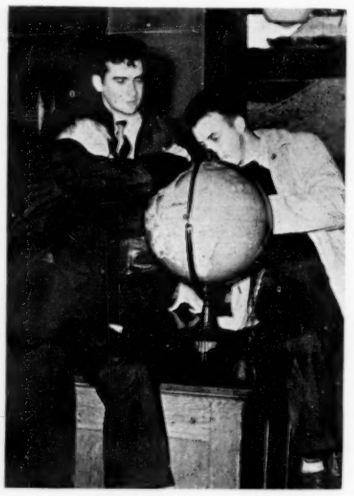
similar nature, again emphasize the fact that the people of the United States are geographically illiterate. Magazines, newspapers, and the mass of polar projections and "Air Age" maps might lead to the impression that new air routes, distances and times between one place and another, are geography. This is hardly what true geography has been or the new global geography will be.

Place or locational geography is certainly important, but it is only one phase of the subject. Real geography is far more than a matter of names, places, and an understanding of directions and flying time. Present-day geography, as well as future geography, concerns itself with all of those features, both cultural and physical, which affect man's adjustments to his natural surroundings. The continuous struggle of man to adjust his activities to climate, soil, topography; to secure efficiently the natural resources of the land; to secure food and shelter; to find and hold markets and control trade routes; all are a part of geography and its significance. The kind of natural surroundings leaves an indelible stamp upon the people who live there.

What relationship exists between geography and world order? The failure to become acquainted with the realities of the world has contributed greatly toward political, social, and economic unrest in the world. Properly taught, geography can and will aid materially toward a realization of whatever semblance of world peace and economic stability is possible. It will help to liberalize our national egotism and prevent a recurrence of isolationism. The latter is an ideology against which the geographer has warned for years. However, his was as "a voice crying in the wilderness." Today, only those with narrow international views and the political robots can fail to appreciate the dangers of isolationism.

The often repeated phrase, "history always repeats itself," has grown thin and time-worn. Although it may have been true in the past, need it continue so? To admit that history will repeat itself in the future is to admit defeat — to admit that world peace is beyond the achievements of man. I, for one, will agree that such will be the case unless a better understanding is secured of political, social, and economic problems of the world. In this understanding, the factors of geography have much to offer.

The importance of geographic factors in postwar planning is clearly



Students make use of the globe as they study various countries.

exemplified in the disposition of Japan. Despite the clamor of certain groups that Japan must be completely annihilated as a nation, such is hardly feasible. As there will always be an England, likewise there will always be a Japan. A nation composed of a people as virile, energetic, and willing to learn as have been the Japanese, will be difficult to liquidate. Yet Japan must be reduced to at least a second-rate power. This, of course, can be accomplished by reducing her possessions to the four islands of Japan proper. Intimate geographic knowledge indicates that the natural resources of these islands are insufficient to support a first-rate power.

However, the mere shearing of her outer possessions will be only a small part of the plans that need be formulated for postwar Japan. In the first place, there were in 1938 over 73 million people living in an area about the size of California. This was a density of 490 per square mile. These figures become meaningful when it is pointed out that there were 3,116 Japanese for each square mile of cultivated land. Furthermore, all the easily tillable land is under cultivation. Further expansion must be as a result of expensive irrigation, drainage, and fertilization.

A second factor of geographic significance is that the country lacks an adequate supply of mineral resources to maintain industry. Yet Japan must continue to maintain industry as a check value for the intense pressure of overpopulation that has existed for at least the last forty years. Japan must be permitted to import raw products and export finished articles of commerce if economic stability of any sort is expected to exist.

The remarks just made are only a few of the many relative to geography and postwar planning for Japan. They do indicate, however, that a full knowledge of the geographic, as well as the political, social, and economic aspects of the country will be necessary to insure a "just peace."

As stated previously, Japan is only one example which exhibits the significance of geographic relationships. Similar relationships relative to winning world peace may be pointed out in regard to all the countries involved. Space limits our discussion to Japan, a country of mutual interest to all the United States.

In conclusion, permit me to restate that as a nation, we are geographically illiterate, and that this illiteracy has been basic in our lack of appreciation of many international problems, especially with regard to Latin America and Japan. Many problems evolving from the peace following the first World War resulted from complete disregard of geographic factors. Too frequently sentiment and political intrigue, rather than a sound geographic policy, were used as a basis for boundary and other settlements. Let us hope those who are responsible for drafting the peace after the present war will take into consideration that most important phase of man's adjustment, because in the long run, man succeeds best when he works with Nature, not against her.

Postwar Policy Respecting Cartels and Other Monopolies

Waldo F. Mitchell

Dr. Mitchell, Head of the Department of Social Studies and Professor of Economics at Indiana State, presents here a clear and unbiased picture of cartels and monopolies — the part they played before the war, during the war, and the part they are likely to play after the war. The policies government ought to take toward cartels and monopolies are discussed also.

I. Some Illustrations of Cartels

A joint committee comprised of members of the United States Senate and House and of officers from the Executive Department carried on an exhaustive study of the concentration of economic power. The results of this study are published in forty-five monographs. In the Final Report this committee, called the Temporary National Economic Committee (TNEC) had this to say of cartels as related to the use of patents to attain the purposes of cartels: "Ample testimony on cartels before the Temporary National Economic Committee and other information which has come to the committee from governmental sources indicate that the interchange of patents between American and foreign concerns has been used as a means of cartelizing an industry to effectively displace competition. The production of vitally important materials, such as beryllium, magnesium, optical glass, and chemicals, has been restrained through international patent controls and cross-licensing which have divided the world market into closed areas. As a result, the capacity of American industry to produce these materials is not adequate to meet the needs of the defense program. The present international emergency further attests the need for a strong policy with respect to the control exercised by foreign governments and their dependent industries over American concerns through the patent system. The committee decries this situation and recommends that appropriate legislation be enacted to remedy it."[1]

The usual operation of a cartel was something like this: A foreign corporation would agree with an American corporation to pool their patents. These two companies would organize a subsidiary American corporation to carry on experimentation and research. The foreign corporation's patents covering a process would lack an essential element or process, which could be supplied only by the "know how" of a foreign representative, who would be in charge of the experimentation at the American plant. Thus the experimentation would be carried on in America, largely at the expense of an American corporation, and the knowledge developed useful only to the foreign country. By this process a foreign country could develop its armament facilities while at the same time either preventing such development in America or know intimately, through a licensing and report system, what America was doing in providing defense either of herself or friendly nations.

One of the most noted cartels was formed by I. G. Farben of Germany and the Standard Oil of New Jersey. After 1933 such companies as I. G. Farben were completely under the control of the Nazi government, so that a cartel agreement virtually was an agreement between Standard Oil and Hitler. I. G. Farben and Standard Oil of New Jersey formed an American company, Jasco, to carry on experiments at Baton Rouge. At this plant there was developed low-cost acetylene, which is the base for making acetic acid. Acetic acid is a basic material for rayon, films, plastics, lacquers, varnishes, and other materials. Germany benefited fully from this development. Before 1939, the plant, having developed low-cost material, had lain idle for over four years. In September, 1939, as soon as the war started in Europe, I. G. Farben decided that this plant at Baton Rouge should be dismantled, and Standard Oil approved this decision. This plant could have been useful to America and her allies.[2]

Farben and Standard Oil had agreements over patents for synthetic rubber production. Farben did not wish to have the patent used in America, because this would make necessary the release of the "know how" knowledge. Thus the holder of the patent, Jasco, an American subsidiary of the two companies forming the cartel, could not use the patent or let it be used. At the same time Germany was using it in developing synthetic rubber. As late as October 22, 1941, six weeks before Pearl Harbor, when we were backing the Allies, Standard Oil attempted to stop Goodrich Rubber Company from producing synthetic rubber under its own process and system by claiming Goodrich was violating the patent right which Farben was using in Germany. Thus Standard Oil was attempting to aid Hitler at a time when our government was doing all that was politically possible to defeat Hitler.[3]

Agreements made in 1929 between

[1] TNEC, *Final Report*, Document No. 35, 1941, p. 32.

[2] Guenther, Reimann, *Patents for Hitler*, 1942, pp. 194-198.

[3] *Ibid*, pp. 161-165, 168, 170-171, 176-177.

I. G. Farben and Standard Oil of New Jersey and continued down to Pearl Harbor accomplished the following. First, they impeded the development of important chemical industries in America, all strategic in defense and war. Second, they gave Standard Oil a protected monopoly of certain developments in the United States, and gave I. G. Farben an exclusive monopoly in other parts of the world. Third, they made possible, with the aid of American money for experimentation, the development of stategic chemical industries inside Germany, and impeded such development not only in the United States but in other countries also.[4]

By agreement between I. G. Farben, Standard Oil of New Jersey, and Shell (Shell being a British Company), royalties were collected on high octane gasoline used by the British Royal Air Force during the Battle of Britain, 1940-1941. Thus, a royalty was being paid by the Royal Air Force, one half of which royalty Standard Oil was to hold in trust for I. G. Farben until the end of the war, at which time it would be paid to I. G. Farben. Clear down to Pearl Harbor, Standard Oil insisted in fulfilling her part of this agreement, even though such a policy was inconsistent with the part our government was taking in the war.[5]

Remington, a subsidiary of DuPont, was the original owner of a patent for making tetracene, an excellent primer for explosives. By agreement, a subsidiary of I. G. Farben in 1941 prohibited exportation of tetracene to Great Britain; by the same agreement our Army and Navy paid royalties on tetracene produced by licensed American firms, one fourth of which royalties went to the subsidiary of I. G. Farben. Thus, by cartel agreement we were prevented from aiding Great Britain, and our Army and Navy were compelled to pay tribute to Hitler in order to provide for defense against Hitler.[6]

[4] *Ibid*, pp. 48-51, 60-61.
[5] *Ibid*, pp. 118, 122.
[6] *Ibid*, pp. 244-248.

Similar agreements between American firms (Standard Oil of New Jersey, General Electric, Bausch and Lomb, Rohm and Haas Aluminum Company) and German firms (I . G. Farben, Zeiss, Krupp, Siemens and Halske) resulted in hindering American production of plexiglass, plastics, tungsten carbide for hardening steel, explosives, military optical equipment, beryllium, magnesium, and other strategic materials.[7]

Because of such agreements Germany could know our Naval program by knowing all about our production of optical equipment. In 1938, Germany had twenty-two times as much tungsten carbide per unit of steel produced as we had, at a time when it was selling for $450 per pound in America and $40 in Germany. As late as September, 1939, when war started in Europe, tungsten carbide was selling in America for five times the price in Germany, and we still knew little about it as an alloy. Krupp controlled it, but Carboloy, a subsidiary of General Electric, had the license for America, and paid Krupp royalties. Carboloy had an agreement with Krupp that Krupp would not export it to America. Of course Krupp would not have exported it anyway, for Germany wanted all of it. Thus Carboloy paid royalties for a promise that none would be imported to the United States at a time when none would be imported anyway.

The international steel cartel was a cartel of cartels. But it did not restrict production of its members. It was formed to control the market for steel. A cartel agreement in quinine before 1939 prevented American manufacturers from making more than half of our requirements of quinine from cinchona bark, and from exporting quinine. An agreement regarding light bulbs obligated American manufacturers to reduce the durability of the bulbs; the agreement also protected bulbs from foreign competition. In Latin America, German cartels used newspapers to promote propaganda, and used their advertising as a weapon against newspapers that were hostile to Germany. In 1937, the International Nickel Company of Canada, only 18.2 per cent of the stock of which was owned in Canada, sold 86 per cent of the world's nickel. Coffee has been monopolized by Brazil, camphor and silk by Japan, quinine by the Netherland Indies, and rubber by Great Britain.[8]

[7] Thurman Arnold, *The Bottlenecks of Business*, pp. 69-70, Reimann, *op cit.*, 231-243, 250-255.

Patents for making airplanes were kept from smaller independent manufacturers in America. They were held by the larger American companies, which sent airplanes to their subsidiaries in Japan. These airplanes were shipped under such names as furniture. Thus airplanes and airplane secrets were sent to Japan for her armament (to be used against us) but such secrets of production could not be used by the smaller independent airplane producers in America.[9]

German control in America was exerted not only through patents. It was exerted also through stock ownership, often owned secretly. We know that banks in Norway, Holland, and Switzerland held stock in American firms for German firms, such as I. G. Farben, Krupp, and Siemens and Halske. The laws pertaining to neutral countries are different from the laws pertaining to belligerents, so the German ownership in American industries was exercised secretly through banks in neutral countries. Thus, German profits and royalties were protected by such arrangements.[10]

Patents that were pooled by German firms in America and Britain often had missing elements or "know how," so that they were practically useless to American and British firms after they were expropriated as war property.

[8] Reimann, *op. cit.*, 214-231, 250-255. See also TNEC, No. 35, pp. 182-186; *American Econ. Rev. Supplement*, March, 1944, pp. 332, 336, 337; Irvin Hexner, *The International Steel Cartel*, 1943, pp. 66, 244-245; E. Staley, *World Economy in Transition*, 1939, pp. 145-147.
[9] Reimann, *op. cit.*, pp. 264-265.
[10] TNEC, *op. cit.*, p. 187.

To American firms such agreements are incident to the system of free enterprise, and are strongly defended as such even when such agreements are against public policy and our common welfare. To Germans, says Norman M. Littell, "While these agreements may be commercial in character to the American business man they are *treaties* to the German government accomplishing definite objectives of German foreign policy in this country. They bear all the earmarks of supervision by the German government.[11]

II. Prevalence of Cartels

Cartels arose in Germany in the 1870's and were known in Great Britain earlier than that. In 1930, there were 2,100 cartels in Germany, while in 1875 there were only eight industrial cartels. They are found largely in chemical industries, textiles, paper, metals, and heavy machinery and other heavy industries. In 1936, there were 128 important international cartels, of which 97 were functioning with German firms as leading partners. The German government was much interested in them, promoted them, and used them as her "foreign diplomats" in consummating her plans in other countries.[12] Under Nazism, firms were compelled to join cartels, thus centralizing Nazi control of capacity, price, cost accounting, foreign production, and foreign markets. It is difficult to tell where cartel policy leaves off and government policy begins in Germany. Cartels are self-governing, nominally, dominated by the large firms. There is thus a hierarchy of control, with the big concerns toward the top, but with the government determining the fundamental policies and tactics.[13]

The importance of these hierarchies of cartels in Germany is well stated by Brady, as follows: "The pattern of control common to all large scale business enterprises is here expanded so as to encompass the entire range of economic activities, and to regiment and direct all parties of interest throughout the entire country. This hierarchical pattern — coupled with the concept of occupationally and functionally self-contained, all-inclusive, definitely circumscribed, and centrally directed trade and group categories which are ranged in a graduated order of power, duties, and importance so as to include the activities of all Germany — constitute the essence of the 'corporate State'." [14]

In Japan also in the large industries, control is highly concentrated, so that the large patriarchically governed family enterprises dominate. There are about four such dominating family groups in Japan. Around each such family group is a far-flung system of cartels and syndicates through which a family such as Mitsubishi operates. As a result of such concentration through cartels, "no policy of state," says Brady, "it is safe to say, is likely to be realized unless it has the active or tacit approval of the great houses that stand at the gravitational center of the swiftly growing concentration movement." As in Germany, the Japanese government forces cartelization.[15]

Italy has never held that competition is the basis of her economic order. Monopolies there have been held to be consistent with Italian law. However, the public has been protected against price fixing and coercion. But cartels and monopolies there have provided the economic organization over which the Fascist government could easily and immediately exercise control over industry.[16]

Since 1935, cartels have been compulsory in France. The government there has held that they promote the national interest. In Belgium, as in France, cartels are legal, but can not be used fraudulently in controlling prices.[17]

In Great Britain, trade associations are cartel like. Trade associations use such devises as price control, production control, market area allocation, tying contracts, rebates, and boycotts. The form of organization is similar to that of cartels. In British literature the terms cartel and trade association are used interchangeably.[18]

Industry in Great Britain is organized into the Federation of British Industries (F.B.I.). This F.B.I. exerts great control over the government through (1) the men who hold positions both in industry and in government committees, and (2) members who are also members of Parliament. This power over government is summarized by Brady as follows: "Thus in large — perhaps in decisive — part of the influences, personalities interests and powers that go to shape policies of individual business firms, the trade associations to which they belong, and the central policy co-ordinating bodies, such as the F.B.I. which they direct, go also to determine the objectives of governmental policies, and to guide and control the execution of those policies through the complex machinery of government administration and regulation." [19]

In the United States we have the United States Chamber of Commerce, which performs about the same functions for large business as does the F.B.I. in Great Britain. As in Germany and Great Britain, organized business is dominated at the top by the large firms and by the persons who control the large firms. The relations between industry and government in the United States have often been about what such relations have been in Great Britain.

III. Some Fundamental Ideas about Cartels

In the view of ordinary people, cartels are either monopolies, or tend to become monopolies. In Germany the word cartel did not include the concept of trust or central organization, but even there cartels tended toward

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[11] *Loc. cit.*

[12] Robert A. Brady, *Business as a System of Power*, 1943, pp. 10-11, 27; Reimann, *op. cit.*, pp 284-285; Karl Pribram, *Cartel Problems*, p. 170.

[13] Brady, *op. cit.*, pp. 41-43; Otto Nathan, *The Nazi Economic System*, 1944, pp. 59-83.

[14] Brady, *op cit.*, pp. 44, 245.

[15] *Ibid*, pp. 88-99, 110, 116-117.

[16] Pribram, *op cit.*, p. 164.

[17] *Ibid*, pp. 168-169.

[18] Brady, *op. cit.*, p. 175.

[19] Brady, *op. cit.*, pp. 176-178.

the trust form of organization.[20] They are thought of as reducing wastes of competition, and as fixers of prices, because low prices waste capital and organization. Probably the main purpose is to shift the risks of the market to competitors, if any, and to the customers to which goods are sold or from which materials and services are purchased. In other words, the main purpose is to use economic power to make conditions favorable to the cartels. As was noted above, they may provide the agency in international affairs to consummate the high political and economic plans of government.[21]

The concept of cartels has changed, so that it now is more a concept of any compact powerful industrial group of producers. As Brady said, "The term 'cartel' has lost its old precision. Once it stood simply for a contractual relationship, usually enforceable at law, between a number of enterprises which had banded themselves together for a fixed period of time in order the better to regulate prices, or production, or marketing terms, conditions and areas, or some other feature of business relating to a single or a closely related group of commodities produced by its members. Now that the term has come into general circulation, it has come to mean any sort of compact — whether recognized and unenforceable by law or not — between two or more concerns for the purpose of manipulating one or more of the elements of conducting business to the advantage of participating parties." [22]

Thus, cartels attempt to better the condition of their members, and to provide greater stability and security from risk for their members. Said Pribram: "The more extensive this development, the more seriously are the stability and productivity of the economic systems threatened."[23] They tend to stabilize prices and thus make production less stable. Inflexible prices set by cartels make other prices less stable, causing price dispersion and unbalance in price and value ratios between goods. Rigid cartel prices cause rigid material costs for firms buying cartel goods, and may interfere greatly with production and selling by such firms. Thus, rigid prices charged by cartels add to other rigid costs of producers, such as taxes, interest, and transportation. In 1933, in Germany, at least 34 per cent of the prices of industrial raw materials sold at fixed or bound prices.[24]

During our experience with NRA, we used cartel methods in the codes. Such codes were for the purpose of restricting competition rather than enhancing it. Out of 677 codes, 560 made provision for price protection through uniform cost accounting or by some other means. One result of these codes was to raise costs. Only in natural-resource industries were the codes most like cartel agreements in allocating business, fixing prices, etc.[25] The NRA provided an illustration also of collusion between management and labor in setting prices high enough to cover wages that management was willing to pay if wages were covered in the price charged buyers.[26]

In America, trade associations were encouraged and allowed free growth in the years 1921 and following. Pribram quoted Charles R. Stevenson as saying: "Practically, under the Harding, Coolidge, and Hoover administrations industry enjoyed, to all intents and purposes, a moratorium from the Sherman Act, and, through the more or less effective trade associations which were developed in most of our industries, competition was to a very considerable extent controlled." [27]

When combinations get started in one industry they spread to other industries that then combine in self-defense against monopolies. But some industries and professions can not or do not organize to protect themselves.

These devices are used by cartels in meeting market risk and competition: (1) Price cutting to drive a competitor from the market; (2) Keeping materials away from non-members or outsiders; (3) Keeping labor from outsiders; (4) Keeping credit away from outsiders through the control of banks; (5) Giving unusual discounts to get sales; (6) Tying contracts by requiring additional conditions of the dealer or purchaser; (7) Creating selling agencies so as to become independent of wholesalers or other dealers; (8) Dumping goods, or selling at less than cost; (9) Granting bonuses to customers who will export goods made of materials purchased from the cartel. Under a strict code of fair competition these practices would be considered unfair to competitors and several of them are illegal. In 1932, the Supreme Court declared legal a selling agency in the Appalachian Coal Company decision. Cartels often resist new enterprises not only domestically, but in other countries also. This restriction of facilities and production may run counter to the governmental policies of the countries concerned. They hinder trade in other countries by monopolizing it, which means that trade from another country can not enter those countries. In America, international cartels have more often resorted to patent control to secure monopoly than to other devices, because of fear that other devices might be counter to the anti-trust laws.[28]

Whatever the danger of cartels to competitors, customers, and labor, the danger is even greater to the state and to other institutions. The dangers of cartels and strongly organized business that overcame the state in Germany, Italy, and Japan, also need be watched in Great Britain and the United States. The danger is that the power of these organizations may be exerted to destroy the foundations of

[20] Pribram, *op. cit.*, pp. 59, 61, 114-116.

[21] Pribram, *op. cit.*, pp. 9, 22, 80, 103-108, 142.

[22] Brady, *op. cit.*, pp. 239-240.

[23] Pribram, *op. cit.*, p. 233.

[24] *Ibid*, pp. 122, 124.

[25] Pribram, *op. cit.*, pp. 205, 213, 225; Harold D. Koontz, *Government Control of Business*, 1941, pp. 506-508; J. M. Clark, *Social Control of Business*, 1939, pp. 431-437.

[26] Pribram, *op. cit.*, p. 214.

[27] *Ibid*, pp. 211-212, note 9.

[28] Pribram, *op. cit.*, pp. 66-73; *Amer. Econ. Rev. Supplement*, March, 1944, pp. 333-338.

democracy.[29] In both Italy and Germany, cartels were made compulsory on minority firms. Each firm was to be regulated in the interests of the industry as a whole, and for the purposes of the state. In this process there was no room for democracy.

IV. Decadence of Free Enterprise

In Section I above we pointed out that, in the name of free enterprise, American firms made agreements with German firms, which agreements were definitely antagonistic not only to the welfare of the country, but also contrary to the defense policies of our government. We should note that in the name of free enterprise our traders sold scrap iron, gasoline, and airplanes to Japan at a time when such exportation was detrimental to our best interests. While free enterprise and unregulated capitalism were conducive to the pristine growth of America, cartels are changing our capitalistic system into something that makes less free all those who are not associated with cartels so as to benefit from their policies. Unlimited competition has given way to cartels and collective action. Enterprise that is free to aid our enemies takes away the freedom of most of us. Germany's most effective secret weapon was her system of agreements with American firms by which she prepared for war while hindering the development of strategic war industries in America and elsewhere.

At a stockholders' meeting on June 2, 1942, a minority stockholder asked the president of the Standard Oil Company of New Jersey when he first became suspicious that I. G. Farben Company was hostile to the United States. The president said that the question was not a proper question, and it went unanswered.[30]

Nazi philosophy visualized cartels as "private empires," with which the German state might make agreements or "treaties." Hitler thought that London was more powerful than Parliament, and that Wall Street was more powerful than Congress. Thus he expected to find that the free enterprise system had become so powerful in organized power that he could dominate London and Washington through agreements with leading firms in England and the United States. We have seen the degree to which he was successful in America before Pearl Harbor.

During the NRA era, the United States Chamber of Commerce expressed itself in 1934 as being in favor of self-drawn codes of fair competition, with government approval, and with no recourse by government after a code had been approved. That is, the United States Chamber of Commerce was in favor of having industry rather than Congress or the state legislatures draw up its own rules and thus govern itself. Thus each industry would draw up codes of conduct that would apply legally to minority members of that industry. These codes were intended to supercede all other statutes dealing with competition, that is the antitrust laws. Thus free enterprise, after uniting so that no firm was free to act on its own initiative was to be turned into a sovereign with power to enforce rules against any and all firms in the industry.[31]

The extent to which free enterprise has organized into a powerful group is well illustrated by the National Association of Manufacturers, which is characterized by Brady in this way: "Within the NAM this same coterie of giant concerns are able to dominate fairly completely policies which affect to some extent all fields and functions of American industry. In evidence of this fact, the LaFollette committee findings disclosed that while NAM claimed approximately 4,000 corporate members for the year 1938, all the directorships together, for the period 1933-1937 inclusive, represented only 127 individuals from 89 firms." The result was that about five per cent of the membership dominated the policy of the NAM. The NAM has become a community force which is politically conscious, and which uses its great resources to exert power and pressure over all the economic, social, and political segments of American society. This great force is dominated at the top by those same men who have control of our cartels. Most of our enterprises that are supposed to be free are dominated by our cartel system. Our free enterprise sytem is turned into something else.[32]

In order the better to protect this organized force from foreign competition, the NAM has favored the mercantile system of hindering imports, expanding exports, and thus making goods scarce for consumers. The government has been asked to approve these policies, and such has been done. Tariffs hinder imports, and the Department of Commerce and the State Department do what is possible to develop exports. As Brady says, "Government in this view, becomes and aid, an ally, a means for the instrumentation of the interests of this transformed system of interlocking business-control pyramids, and the indispensable means for dissolution of the national and ideological forms of its detractors." [33]

The cartels which head up this very powerful force in America are the cartels, which, by agreement, have greatly slowed up the development of technology in America, by control of patents.[34]

Cartels engage in their international activities for business purposes, and continue to do so even after becoming aware that such activities may not be beneficial to the country where the leaders of the cartels are domiciled. Thus, business is put above the country's good.

While our legislation has been opposed to monopolies, the interpretation of "reasonableness" introduced in 1911, the encouragement to monopolies given by the Webb-Pomerene Act, and NRA, and the winking at

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[29] Pribram, *op. cit.*, p. 188. See Brady also.

[30] Reimann, *op. cit.*, pp. 87-88, 307-309.

[31] Pribram, *op. cit.*, pp. 215-216.

[32] Brady, *op. cit.*, pp. 211-212, 217-218.

[33] *Ibid*, pp. 219-220.

[34] Reimann, *op. cit.*, 277-278.

law violation by monopolies during several years of "Coolidge prosperity," all promoted private groups of monopolies which became larger and more powerful, and their size and power resulted in restriction of output of many materials that are basic to cheaper necessities such as housing. Thurman Arnold fears that such control, expanded during the era of expanded defense and war production, will reassert itself in restricted production, once the war production decreases. He expresses the hope of private monopolists in this way: "Their efforts to get that control today are increasing. For example, in magnesium, plastic glass, synthetic rubber, zinc, machine tools, glass containers, military optical instruments, acetic acid, nitrogen, beryllium dies, all substances useful in peace, the Antitrust Division finds that through the failure to use, or through the improper use of, patents, production has been retarded, patents have been pooled or exchanged subject to revision, or arbitrarily withheld from use, all for the purpose of creating a dominant position in the industry and in some private groups, building a Maginot Line around the industry to protect it from new enterprise. Licenses have been refused outright to potential competitors or offered only on terms which are prohibitive. Licenses when granted have frequently placed restrictions on output, on the use to which the product can be placed, on the quality or kind of product which can be produced, or on the geographical areas within which the product can be manufactured or sold.

"Patents are only one of the instruments of control. The same thing can be done through financial control, through the control of established systems of distribution, through boycotts, through combinations of manufacturers and labor, through trade associations, through the use of trademarks, grade marking, in fact, through every imaginable business device. Under the cloak of distributing statistical information, trade associations have kept the business within the ring and established a quota for every member. Under the cloak of advertising, distributors have been prevented from selling the products of competitors of great advertisers. The power of great organizations to buy and sell in large quantities has been illegally used to put a handicap on new enterprise.

"And so the cartel system has been maintained." [35]

Free enterprise has been its own worst enemy. With pretensions of individualism, with slogans of competition as the life of trade, and with mouthings of free enterprise, the strong and vigorous have gained power through organization and monopoly, and have suppressed real free enterprise. Free enterprise has been flouted by those who have used their freedom to reduce and endanger the freedom of others. So free enterprise languished, was in decadence, and was in danger, not from government, but from too much freedom of those who abused freedom. As war came on and government and a patriotic spirit broke the shackles of a chained economy of scarcity and restriction, production and national income doubled in three years time. Maybe a decadent free enterprise can be reincarnated, and an economy of plenty continue into peaceful years.

V. Past, Present, and Future Policy toward Cartels and Monopolies

In looking for a proper policy toward cartels, we shall use the broad concept of the term so as to include any industrial monopoly no matter in what form or how consummated.

In order to avoid the possibility of expropriation of belligerents' nationals' property, such property is often transferred to neutral countries. International cartels have thus avoided expropriation laws by having either subsidiaries or agents in neutral countries. Switzerland has become *the* neutral country to which cartels, holding companies, and others have transferred their stock holdings, patents, contracts, etc. In 1939, there were 2,278 international financial corporations registered there. There were 214 banks and 38 insurance companies, whose aggregate assets were very large for so small a country.[36]

Coping with such complex legal legerdemain as cartels use, and making cartels responsible for their acts, will probably require the registration of their agreements, stock ownership, and other contracts of a foreign nature. Maybe a country could better safe-guard its interests if there were an international agency for the purpose of registering the ownership of such property.

Policies of nations affect cartel agreements. Since 1929, many cartel agreements have been necessarily modified because of tariff legislation, abandonment of most favored nation clauses in treaties, preferential trade agreements, and import quotas.[37] Since the breakdown of the gold standard in 1931 and following, cartel agreements have been concerned much with export quotas. Export quotas have given access to foreign markets, and have protected home production at the same time. Many of the cartel policies have been integrated with national government policies; governments often have promoted cartels, and often cartels have aided government by helping develop rules or systems of regulation of cartels, in which case cartels lose their independence.[38]

Cartels are short-sighted or indifferent in their international activities. They do not hesitate to dump goods in foreign countries at prices less than domestic prices, thus creating international antagonisms. Cartel agreements may act like a tariff in keeping goods out of a country, if there is an allocation of territory with agreement not to export to a given country. Such agreements that restrict the exportation and importation of goods may run counter to national policy of increasing international trade. In such

[35] Thurman Arnold, *Democracy and Free Enterprise*, 1942, pp. 67-69.

[36] *Harper's Magazine*, Vol. 187, pp. 304-310.

[37] Pribram, p. 147.

[38] John B. Condliffe, *The Reconstruction of World Trade*, 1941, p. 337.

cases government should frankly recognize that free enterprise has transcended its rights, and such agreements should be abrogated or controlled so as to make private policy consonant with public policy.

There are two cases of cartel action which are difficult to control. If the country is dependent on cartel-controlled foreign goods, then it is difficult to control such a cartel. If a foreign cartel in sending us goods, sends them to a cartel branch here, but passes title to the goods outside our boundaries, this precludes direct control of the cartel.[39]

Like most other commercial countries we have attempted to promote exports. In 1918, in order better to do this, Congress passed the Webb-Pomerene Law, which exempts combinations for exporting from the anti-trust laws. Under this law, legalized export cartels rose from forty-three in 1920 to fifty-seven in 1930, and declined to forty-three in 1940, with 434 members. These export cartels exported 724 millions of dollars worth of goods in 1929, and 161 millions in 1938. The exported products were largely metals, metal products, mining products, and petroleum products.[40] This Act has been interpreted as permitting American firms to join international cartels. Of course, if such a cartel should monopolize any foreign trade, then such monopolization would thereby restrain the trade of American firms that were not members of the cartel; such firms could not trade in the areas of monopolization.[41] Public policy should recognize that monopolization in foreign trade may be harmful in the same way as monopolization in the domestic market.

Only in Germany have cartel agreements had the same legal status as other contracts. We have regarded them as monopolies as applied to domestic trade, even if the law against them has not been enforced.[42] In Europe, no way of distinguishing licit from illicit monopolistic practices has been developed. Voluntary cartels are accepted, but until recently they have not been definitely placed legally in the economic systems. In America, monopolies have been considered at law merely from their relationship to and their effects upon producers and consumers. Our judicial and administrative systems have not regarded monopolies as to their effect upon the whole economic system, and their effect upon the state if their power is not kept in check. In fact, our administrative enforcement officials under the anti-trust laws have usually favored cartelization but have sought to supervise their practices. Our enforcement officials have accepted pretty generally the cartel agreements that competition may be too wasteful and that cartels might be large if they did not unreasonably injure competitors or consumers.

In the years 1938-1943, Thurman Arnold, then head of the Anti-trust Division of the Department of Justice, was against monopolies, even the size of monopolies. In those five years, there were instituted 44 per cent of all the anti-trust proceedings that have ever been started in the fifty-three years of the Sherman Act. He won many of those legal battles against great odds, but when war came on in 1941, legal actions against many of the firms engaged in war production were tabled for the duration. What had been a great furor of legal activity became a calm. But Arnold did develop a real popular interest in cartels and what they mean for America. However, there has been little change in the real cartel situation in America.[43]

The rise of monopoly power as such has usually been held by the courts since 1911 to be consistent with public interest. Arnold was fighting this idea. That is, the idea that had come to prevail was that the size of a firm or cartel was no criterian of its legality. Whether a monopoly is bad is determined by whether it damages private interests or coerces persons through excessive prices. Damage to private interests must be unreasonable damage before the actions of the monopoly are illegal. This rule of reason, introduced in the Standard Oil Case of 1911, has been understood to mean that the government will not institute proceedings against a monopoly which (1) contributes to the efficiency of mass production, or (2) goes no further than to control markets so as to make them orderly rather than chaotic, or (3) which, if broken up, would dislocate and disorganize great industries.[44] Arnold believes that legality should be determined, at least in part, upon whether the savings in efficiency is passed on to the consumer. But the power of monopoly has not been really determined, he believes, by its effect upon consumers.[45]

In America, our policy since 1911 has been to supervise monopolies rather than destroy them. But such a policy does not visualize the dangers of this policy — the danger to consumers, to the economic system, to the state. Supervision does not prevent private control of production, of market allocation, price fixing, menace to consumers, or danger to the state. In Europe since 1918, cartels have usually been considered as efficient, unavoidable, and desirable. Cartels have been thought to promote national interests, and Congress too recognized this in the Webb-Pomerene Act and N.I.R.A.[46]

In an industrial age, strategic materials are essential, and whoever controls them controls the welfare of other peoples and nations. The manner in which such basic materials are controlled, withheld, and shared

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[39] *Amer. Econ. Rev. Supplement*, March, 1944, pp. 338-339.

[40] National Association of Manufacturers, *Fact and Fancy in the T. N. E. C. Monographs*, 1942, p. 87.

[41] *Amer. Econ. Rev. Supplement*, March, 1944, p. 338.

[42] Thurman Arnold, *The Bottlenecks of Business*, pp. 293-294.

[43] *Political Science Quarterly*, Vol. 58, pp. 338-355; Pribram, *op. cit.*, pp. 161,189.

[44] Pribram, *op. cit.*, p. 190; Brady, *op. cit.*, p. 249.

[45] Thurman Arnold, *The Bottlenecks of Business*, pp. 125-127.

[46] Pribram, *op. cit.*, pp. 195-196; Ervin Hexner, *The International Steel Cartel*, 1943, pp. 238-239.

should not be for private decision and determination. This is a matter of sovereignty, and may be, of international sovereignty. Any world organization which would have any hope for peace must wrestle with this problem of basic and strategic materials. Their monopolization, production, control, and use certainly can not be left to private cartels.

We have had two points of view regarding business organization and competition. One view is that our business system is still atomistic, small, independent, and competitive, or at least should be. The other view is that economy and efficiency warrant largeness of scale of operation, and that "no harm can come from big boys as long as big boys do no harm." That is, large concerns are welcome, but will be watched so that they do no harm.[47]

In this watching process the watcher has been lulled to sleep, and all the evils of largeness have proceeded apace, as has been noted above. So a third point of view is emerging. Since basic materials and goods *are* basic and fundamental, they no longer should be subject to complete control by private enterprise. That is, no private enterprise should be free to export and import such basic materials at will, or hinder their production under the cloak of patents or other business or legal device. The idea of the new age is to promote production and plenty rather than to hinder production and enhance profit from scarcity. The further idea is that there are times when public interest supercedes private interest and right. The policy toward cartels should be based definitely on this third idea, and the basic materials of the modern age should be more definitely developed, produced, and controlled for the general welfare. This means that the sovereign power of the people through democratic government must more definitely plan for the development of plenty of such basic materials; and sharing of such materials among peoples that know how to use them for peaceful pursuits must be assured.

[47] Pribram, *op. cit.*, p. 154.

Hexner views the international problem this way: "One may safely state that large international commodity marketing control could be subjected to supranational supervision. This supervision ought to move on a scale that is realizable in the light of present experiences. Its prerequisite is the subjecting of international combinations to an adequate degree of publicity in regard to their structure, interrelationships, and operations. The supervision must see that concentrated economic power does not interfere with international or national politics, especially that this power is not abused in respect to labor. International supervision should inquire whether artificial scarcity is being created in order to increase prices. It should inquire also whether cartel policies are obstructing the technical development of their own industries, or of other branches of industries, by self-imposed technical restrictions. If there is established a mechanism supervising international combinations from the point of view of supranational interests, one of the important objectives of such an agency should be to ascertain whether there is a fair possibility for outsiders to operate on the market and by what means the combination fights outsiders, if any. If the political development of the future should lead to something that may be called supranational policies, these policies should vigorously abstain from actively supporting the growth of complete monopolies, though these agencies should not engage in hopeless fights against co-operative international combinations, driving them underground. The very fact that outsiders are not excluded from markets influences cartel policies considerably. If national governments would agree that international combinations, in which their producers or distributors co-operate, participate in international or economic sanctions, then supranational agencies could direct and supervise this participation. Whether possible national public ownership of large industries would facilitate international supervision of marketing controls can not be answered unconditionally in the affirmative." [48]

While Hexner, in this quotation, has seen the main problems, yet he places too much confidence in publicity, outsiders, and competition as means for supervising and controlling cartels. Sovereign control of trading in basic commodities must be more direct, definite, and effective than his solution would bring about. Public authority that represents the welfare of vast peoples must determine where basic materials are going and what uses are being made of them. It is far easier to control the production and flow of basic materials directly than it is to control the forms and legal intricacies of a system of cartel contracts, patent agreements, holding companies, and other incidental devices for production and marketing.

The problem of cartels and monopolies is a domestic one as well as an international problem. During the defense and war periods strategic materials and production facilities have poured forth in the greatest of abundance. There has been no limitation for purposes of profiting through scarcity or through taking advantage of any helplessness of our government because of need for goods. But the cartels are waiting and planning to reassert their hold and control of production. It should be realized that public welfare should place the production and sale of basic world materials above exclusive and absolute control of private enterprise. Sound public policy demands that cartels be subjected not only to the scrutiny of public authority, but to direct and effective control of the production, plenty, and flow of such basic materials. We need not be concerned overmuch with the flow of cosmetics, cigarettes, tinsel, gadgets, and countless other things, but cartel domination of production, hindered production, and absolute control of basic materials must be broken, and not resumed once the war is over.[49]

[48] Hexner, *op. cit.*, pp. 271-272.

[49] Reimann, *op. cit.*, p. 289; Condliffe, *op. cit.*, pp. 339-340.

The conference recently held at Breton Wood at which such problems as monetary standards, foreign exchange control, and reconstruction were thought by the expert representatives from forty-four nations to transcend private interest, has set a pattern of thought for viewing other such problems. Maybe these same nations will view cartels in their proper light, and deal with them for the general and common interest. Either cartels will be controlled or they will control our governments, our lives, and our liberties.

Mackell . . .

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does not include a liberal sprinkling of science instruction will meet with his just disapproval.

The press, the radio, and other propaganda agencies are busy today preparing the public for the new wonders from the technological laboratories which will be offered to the world at the end of hostilities. There will be a whole new set of gadgets based upon electronics alone. Then, too, there will be a new age of communication and transportation to say nothing of better housing, lighting, heating, ventilation, air conditioning, and refrigeration. All these and many more are the products of physical research.

Physics is one of the oldest and one of the most exact sciences. With Galileo, Newton, Faraday, Roentgen, and many others, new eras have been ushered in. Great advances in the field of physics have aided man in his long struggle against the forces of ignorance and superstition. Physics, like mathematics, has been the handmaiden of the other sciences which have made great strides, thanks to the microscope, the X-ray, electronics, and even the differential equation.

It would indeed be a very short-sighted educational program which would omit training in the basic sciences from a school curriculum. Everyone who professes to be educated in the future must be given an opportunity to learn something about the wonders of the scientific world.

Wilkinson . . .

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already have been accomplished and only wait to be put into large-scale practice.

The advances in the field of foods will be startling to say the least. A variety of yeasts of different flavors may become a standard article of diet because of their high protein content and ease of growth. Food distribution will be greatly improved — thanks to dehydration, quick-freezing, and new canning methods.

The above mentioned advancements are just a few of the many new fields in which chemistry has and will exert a profound influence. The science has already been recognized as a fundamental corollary to a great many branches of learning. The medical profession values it so highly that such subjects as general chemistry, organic chemistry, and qualitative and quantitative analysis are required for admission to medical school. After entrance into medical school, advanced courses in bio-chemistry are required. Similar but not so extensive requirements must be met by pre-dental students and nurses. Chemistry is one of the requirements for entrance into a school of optometry.

Since chemistry has so permeated the biological field, students in such fields as botany, zoology, physiology, home economics, health, and physical education are expected to have some knowledge of the subject. The great advances that have been made in the fields of electro-chemistry and atomic structure have brought the fields of chemistry and physics so close together that one can not get along without the other. They are literally Siamese twins. Any field of science particularly chemistry and physics, requires a working knowledge of mathematics. Chemistry is required of all engineering students, the number and variety of the courses depending upon the field.

Here at Indiana State Teachers College we are particularly interested in training chemistry and general science teachers for the high schools of the state. At the present time the supply is far short of the demand and in the years to come, as the public becomes more and more conscious of "better things for better living through chemistry," the subject will be taught in every secondary school in the state, if the teachers are available. Nothing has been said of chemistry as a cultural subject, but it seems to the writer that any educated person in order better to understand and enjoy this world of modern science, should have some knowledge of chemistry. It is from these people, who take chemistry from curiosity, who become interested and then enamored to the extent that they make it their life work, that the pioneers and leaders come.

Smith . . .

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animal field has improved breeds of cattle, sheep, hogs, chickens, dogs, etc. In all these strict pedigrees are kept.

In this short article it is not possible to comment on several other important divisions of botany: for instance, plant pathology, a very important field of study, morphology, physiology, ecology, taxonomy, paleobotany, economic botany, and pharmaceutical botany.

For a coherent understanding of any specialized field in botany it is as necessary for the beginning student to master the general basic course in botany as it is for the medical student to master the whole body anatomy before he begins to specialize, for example, in the anatomy of the eye. One gains a better understanding of the parts or divisions of a science if he understands it somewhat as a whole.

So what will be the place of botany in the postwar world?It would seem that it will not be materially different from the prewar period. When the weapons of death and destruction cease and man turns to living and letting live once more, his thoughts no doubt will focus more and more on how he can make plants serve him better in a peaceful world.

International Education

E. L. Welborn

Dr. Welborn is chairman of the Department of Education and Professor of Education at Indiana State Teachers College. In this article, he summarizes the reports of the American delegates to the Conference of Allied Ministers of Education.

What must be done to end the teaching in German schools of Nordic superiority and ideas of world conquest and to substitute therefor the kind of education which will make for world peace? What needs to be done along the line of restoration and reconstruction of education in all devastated countries? How can the program of promoting world peace through education begun years ago, be extended and made fully effective? Toward the solution of these problems, widespread efforts are being made. It is the purpose of this discussion to summarize the work that has been done recently and the results achieved. No attempt will be made to evaluate the results.

Throughout 1942 and 1943, numerous committees were created in this country for the purpose of dealing with postwar problems of international education. At that time the notion that representatives of the United Nations should take over the complete administration of schools in Axis countries was rather prevalent. For example, the International Education Assembly held at Harper's Ferry, Virginia, in September, 1943, went on record in favor of taking over education in Axis countries.

During this period also the Cultural Relations Division of the State Department at Washington began to investigate the problems of cultural and intellectual rehabilitation. Some months ago, Dean Grayson N. Kefauver of Stanford University, who has been especially prominent in the international education field, became a member of the State Department.

In England an organization known as the Conference of Allied Ministers of Education was formed in October, 1942. The membership consisted of the ministers of education of Britain, Norway, Netherlands, Belgium, Luxembourg, France, Yugoslavia, Poland, Czechoslovakia, and Greece. Six other nations, Russia, China, Canada, New Zealand, India, and the United States have had observers at the meetings.

In March, 1944, the State Department announced its intention to collaborate with the Conference of Allied Ministers of Education and sent to London a delegation consisting of Congressman J. William Fulbright, Dean C. Mildred Thompson of Vassar College, Dr. John W. Studebaker, U. S. Commissioner of Education, Dr. Archibald MacLeish, Librarian of Congress, and two representatives of the State Department, Dr. Ralph E. Turner and Dr. Grayson N. Kefauver. Representative Fulbright was designated as Chairman. In the words of Dr. Turner, "The American government has not entered into any new international agency for educational reconstruction. The American delegation's instructions said it was to inquire into the prospects of organizing a democratic international agency on a United Nations basis for work in the field of educational reconstruction. The second part of its instructions said that it was to collaborate in the matter of programs." [1]

[1]All quotations used in this paper are from *News-Letter*, No. 2, July 12, 1944, issued by the Liaison Committee for International Education.

The results of the deliberations of the London Conference can be regarded as the final outcome to date of all consideration of international education. These results were expounded by various members of the American delegation at three meetings held subsequent to their return. These include the Conference of Constituent Representatives of the American Council on Education, May 4, 1944, the Liaison Committee of the National Education Association, May 5, and the Second International Education Assembly at Hood College, Frederick, Maryland, during the week of June 5.

Noteworthy at the London meeting was the spirit of co-operation and good will manifested. Said Dr. Studebaker, "It was an inspiring thing to see these people from so many different nations around the table day after day, thinking together and co-operating in every possible manner."

On the big problem of altering the type of education in the Axis nations, the point of view was quite different from that adopted at Harper's Ferry. On this problem Dr. Thompson reported as follows:

"How are we going to get rid of this Facist influence upon the children of these European schools? We can't go in and force them to study our kind of democracy and say, 'Take it or leave it and we will beat you over the head if you don't.' We can't do that. The only thing we can do is to have the best schools, the best training schools for teachers, and the best democracy of our own. These young people studying here will see the free life, will appreciate the free life, the free education, and go back and try to establish it and carry it through their schools."

On the same issue Commissioner Studebaker said, "We don't expect anybody to build a world organization of education that will dominate education — only an organization that will facilitate an understanding of the problems of the various parts of the world."

One special factor in altering the type of education in Axis nations is the content of textbooks, particularly

those in history. Another is the influence on international attitudes of films, broadcasts, and literature. The Conference has commissions dealing with these agencies. The commission on books and periodicals is preparing a manual on the teaching of history in Europe. More than half of it will consist of factual material on European history and the remainder, of suggestions for teaching. Dr. Studebaker called it "a courageous undertaking."

The most immediate and pressing problem was that of providing school supplies and equipment to replace what the war has destroyed. Dr. Turner made the following statement on this situation:

"The Conference of Allied Ministers had not created a commission to deal with basic school supplies. This happens to be the point at which educational reconstruction begins. Get enough of these supplies into a country and children can go about the tasks of learning. The American education delegation put its emphasis upon this particular problem at the outset and succeeded in getting the Conference to study the needs of the countries for these kinds of supplies. Now it is not possible to make over-all estimates to include the whole body of materials to restore the whole educational system, for that involves knowing what educational policies are going to be followed. Since you can't know the amount of destruction and since you can't know enough about policy to make an over-all estimate, you are limited to an est'mate of basic supplies required for a short period of time. Get those supplies. Have them ready, put them in a country, get your children into school, and then look at the situation and move from this preliminary phase into what may be a recognized policy of educational reconstruction. This would appear a practical way of beginning. The achievement of a situation in which it is possible to work at this concrete problem, I would claim is one of the significant contributions the American delegation made."

The need of trained personnel also was considered. Here the extreme difficulty of sending people to this country for training, and the undesirability of imposing people sent from the United States were stressed. Said Dr. Turner, "There has been some talk about sending students to Britain for training. There has been some talk about continuing the exchange of students and professors as before the war. They have in some instances understaken to assess the situation with respect to the professions, the skilled crafts, et cetera, in order to determine what type of training institutions, what types of higher education, what types of students they need to send abroad first. I was able, with the other members of the delegation, to get a preliminary discussion. We made an inquiry among the Ministers of Education to find what relatively small number of students might be brought here in the fall. I do not know whether that action can be taken or not, but we are working on that. As regards the longer time problem of bringing students, there is very little that can be said. We may start as soon as we get some facts."

The problems involved in restoring library facilities will be made clear by quoting from the remarks of Dr. MacLeish. He said, "The question of library facilities in Europe and, in fact, throughout the occupied areas of the world must be dealt with separately from the general problem of educational reconstruction, because it is insoluable in the terms in which the general problem is soluable. I am referring specifically to the situation which we know to exist in Poland and in China and which may very well exist in large parts of Europe before the Nazis get through. The Nazis have not been reluctant to state what they propose to do if they are destroyed. They propose to destroy certain things with them. Up to now, we have always pleased ourselves by refusing to believe that they mean what they say. Sooner or later, we will take them seriously. We know quite definitely what the situation in China is. We know what the Nazis did to the libraries of the University and the Royal Institute in Naples.

"The Nazis' action in trying to create these cultural deserts was a political action. It was a political action because the Nazis, having a certain "kultur" or anti-culture of their own to impose, intended to create a situation in which anti-culture could take root, and they did it by liquidating the intellectuals, destroying the teachers, destroying the libraries, carting the books away or burning them, doing all the many things that you have heard of so often that you don't quite listen when you hear them again.

"However, simply because we feel that we can't permit that kind of situation to exist, it doesn't follow that we can do anything about it. For one thing, the books that will be necessary to restore basic library facilities in any considerable area of the world don't exist and can't be made to exist. They are not in booksellers' hands. They are not on publishers' lists. No publisher could afford to bring out an edition of three or four or five or twelve or twenty. Neither would it be possible even with the cheapest forms of duplication by photography and otherwise to make those things available. You therefore come face-to-face with a situation in which it seems to me you have one possible solution, and only one — a system of world circulation of library materials, the extension on a world basis of the present practice of inter-library loan of materials either in original or in photo copy."

In its scope and from the point of view of implementing the plans mentioned above, the formulation of a United Nations organization was the most important step taken. The draft constitution is in the State Department and has not been published. However, a summary has been issued by the Secretariat of the Conference of Allied Ministers. Membership is open to all the United Nations and such other nations as shall be accepted by the Assembly. In the Assembly there are to be equal representation and votes for all member states. Also

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Problem of Juvenile Delinquency

John W. Lyda

The subject of juvenile delinquency is a debatable one. In the March, 1944, issue of the JOURNAL, *there appeared a brief message by Rev. Backus of Indianapolis in which he maintained the problem is no greater now than before the war.*[1] *Mr. Lyda believes differently and gives reasons why he believes delinquency has increased and theories for combatting it.*

The present unprecedented disregard of young Americans for our moral and civil codes is a real threat to the existence of our few institutions in the future. The survival of a democracy among any people depends in a large measure upon the willing obedience of its citizens to the laws of their own choosing.

That a much larger per cent of the youth and children of today are much less respectful and obedient to their parents and other duly constituted authority than were those of a few decades ago is common knowledge.

According to eminent psychologists, children are born neither law-abiding nor lawless, rather they are equipped at birth with a number of fundamental drives. The kind of personality they become later depends upon the many factors of their total environment. For these reasons the kind of environment in which children grow up is of vital concern to organized society.

Juvenile delinquency has been growing steadily for several years. Since 1940, it has increased 25 per cent. Because of this, thoughtful citizens are seeking to find the causes and a solution. Many people have attempted to account for this unhappy social phenomenon in terms of the conditions resulting from our entering the present war. While these, beyond a doubt, have contributed much to it, they have not been the sole cause.

Through many centuries of experience mankind has learned that children must be trained and guided in order to become desirable members of society. This has divine sanction. In the Bible, parents are commanded to train their children the way they should go and are assured that they will not depart therefrom when they are old.

The state has wisely organized our publicly-financed school system to supplement the efforts of the home in the training and guidance of our children to become good and useful citizens. This institution has made priceless contributions to this in the knowledge phase of education. However, according to the findings of such psychologists as, Allport, Root, Thuston, and Link, after extensive investigations in all parts of the nation, our high schools and colleges do not develop desirable personality traits in their students to any appreciable degree. That one must possess many such traits as: obedience to civil laws, honesty, reliability, industry, tolerance, and a number of others required for citizenship in the highest and best sense is not to be questioned.

Until recently, the home and the church played a much more significant role in developing these desirable personality traits in children than they do at present. Since this is true it remains for the school in the present and in the future to assume a far larger share in this phase of the training of its pupils than it did in the past.

In the early years of our country's history an overwhelming majority of its inhabitants were members of the organized church and attended its services where religious instructions were given. Sunday was indeed a day of rest and worship. Today, only a minority of our people attend any kind of church services where belief in the existence of a Supreme Being, the arbiter of right and wrong, the existence of a divine order in the universe, the golden rule, the Ten Commandments and the other common tenets of the chuch are taught. Not many parents at present attempt to give their children any religious instruction at all in the home.

According to the findings of the Wickersham Committee, of the prohibition era, the absence of any notable religious influence in the lives of so many people of our country was one of the main causes of the great wave of lawlessness that swept the nation during that period. After having administered his personality test to more than 10,000 children, Dr. Link found that those children who attended Sunday School and whose parents attended church services, had better personalities than did the others.

The persistent wide-spread attack of the so-called liberals on our religious, moral, and legal codes during the present century has doubtlessly been a potent factor in accelerating the present wave of youthful lawlessness. These liberals also assert that these codes are old fashioned and therefore inadequate for the present, yet they have nothing to offer to take their places. In this atmosphere of freedom from the traditions and the restraints of the past, is it any wonder then that a tidal wave of lawlessness from the ocean of anarchy now threatens to engulf the whole nation and to seriously threaten the very existence of law and order?

Conditions resulting from our entering the war have accelerated the present menacing wave of youthful disrespect for law. What little remained of parental supervision and guidance over the conduct of young people at the beginning of the present decade has been strained to almost the breaking point. The calling of fathers to the colors, and of mothers to labor long hours in our war plants to produce munitions of war has has-

[1] Burdette Backus, "Rev Backus' View of the Delinquency Problem," *Teachers College Journal*, Vol. 15, No. 4, (March, 1944), p. 78.

tened the coming of this deplorable state.

The great increase in the population of many communities caused by the location of war industries and camps, where none had existed before and the failure of many such communities to provide adequate supervised wholesome recreation for their young people during their leisure hours has taxed the already strained and the already inadequate law enforcing agencies beyond their ability to cope effectively with the problem of enforcing the law.

Parents should make a greater effort to teach their children obedience and respect for the law and for all duly constituted authorities and should also emphasize the teaching of other personality traits of good citizens both by precept and example. Parents should assume greater responsibility for the conduct of their children outside the home as well as in the home and should be legally responsible for this.

The school should carry a much larger responsibility for training children in desirable personality traits than formerly and should also co-operate more effectively with other institutions engaged in the training and guidance of children and young people.

The church can well afford to increase its present efforts to vitalize and extend its teaching of religion and to exert its good influence throughout the community regardless of race, color, or religious affiliations.

Our national, state, and local governments should place greater responsibility on the parents for the conduct of their children and use their power to make of all communities better places in which to live and to rear families. Let the efforts of the juvenile courts be reformative rather than punitive in dealing with those brought before them, and also co-operate whole-heartedly with other organizations seeking to promote the well being and wholesome development of erring children and young people.

Clean supervised recreation for the leisure hours of children and young people is a responsibility of the entire community. None should shirk it.

These are only a few methods by which this important pressing problem may be attacked.

Since our present wave of juvenile delinquency is due to adult bungling in the rearing and guidance of children, it is our plain duty to seek to find a workable solution. Best results are to be obtained by the home, the school, the church, the police, the courts, and all other institutions and organizations interested in finding a solution for this menacing problem co-operating and working together. eLt all public spirited citizens use their best efforts to bring this about as rapidly as possible.

Introduction . . .

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was completed, and the departments of physics, chemistry, and biology moved into the new building. The departments of physiology and geography, however, remained in the old quarters in the old building until 1922, when they moved across to the new building. About this time, Professor Fred Donaghy became a member of the science faculty as assistant professor of biology, and he succeeded Professor U. O. Cox as head of the department of biology when Professor Cox died in 1920.

In 1922, the several departments of science, physics, chemistry, biology, geography, and physiology were recombined into one large department under the chairmanship of Dr. L. J. Rettger. The year preceding this saw the following new members added to the science faculty: Paul D. Wilkinson, Benjamin H. Smith, Dona Graam, and J. F. Mackell, and in subsequent years, Dr. W. P. Allyn, Dr. Bessie Noyes, Dr. R. W. Karpinski, Professor Wendell L. Perkins, Dr. O. E. Rumple, Dr. G. D. Koch, Dr. D. F. Johnson have been added to the faculty. Mr. Walter Woodrow came to the science faculty in 1908, and Miss Geraldine Shontz came in 1929. Both of these teachers have been connected with the Laboratory School during this time. Mr. Woodrow was retired in 1944. Mr. Woodrow was succeeded by Russell MacDougal who came to the Laboratory School from Kalamazoo, Michigan, in 1944.

In 1937, Dr. L. J. Rettger, who had been chairman of the Department of Science, retired, and the department has since that time elected a chairman biennially. The chairman at the present time is J. F. Mackell, professor of Physics.

It might appear that a department which is as large as the Department of Science might become top-heavy and unworkable. However, the experience of the Department during the past twenty years indicates that the several divisions of the department are capable of working harmoniously toward the ultimate aim of preparing science teachers for the schools of the state.

During the past few years we are finding more and more people in our science courses who are headed toward other professions than teaching. At the present time we have a great number of young people who are doing their premedical work in the Department of Science in this college, and we also have a great number who are taking courses in preparation for nursing and for work as laboratory technicians. During the past two years the Department has been very busy taking care of the needs of the V-12 Navy program. This is especially true in the physical sciences. The Department feels that when the war is over its services will be needed for work in the field of rehabilitation.

The Department of Science has grown so rapidly during the last few years that the present building is now being used beyond its normal capacity, and plans have been submitted for an addition to the present building. If these plans are accepted and the construction is carried out according to plan, the capacity will be approximateley doubled, and the members of the staff feel that this will be needed if science is to take its proper place in the future of Indiana State Teachers College.

Deep in the Heart of Texas

E. E. Oberholtzer

Dr. Oberholtzer accepted the position of superintendent of the city schools in Houston, Texas, twenty years ago. During those years, he has worked unceasingly to make his school system one of the leading systems in the country. In this article he tells of the development of the educational setup of the whole state of Texas, with emphasis upon the Houston Independent School District.

The background of this story long antedates the popular song by that name. I am now starting on my twenty-first year of service as Superintendent of the Schools of Houston, Texas, and my eighteenth year as President of the Junior College and University of Houston.

Twenty years in Texas makes one a native in every respect. If one should interview an enthusiastic Texan, a Californian would not in any sense be a rival for local state pride. Really, Texas can brag. I have recently run across a book, "Texas Brags," collected by John Randolph. Perhaps the reader has heard many of these before, but I quote a few of these for your own amusement:

"Could any other state except Texas cause them to put up a sign in CALIFORNIA that read, "BUY BONDS AND HELP TEXAS WIN THE WAR!"

"If all the steers in Texas were one big steer, he could stand with his front feet in the Gulf of Mexico, his hind feet in Hudson Bay and punch a hole in the moon with his horns while he brushed the mist off the Aurora Borealis with his tail."

"If all the cotton grown in Texas were baled and made into a stairway, it would reach to the pearly gates."

"Texas jackrabbits, with ears as big as sails, can stomp their hind feet so loud the echo bounces back from three counties off, can jump two mountains without a running start, and can run so fast that they can travel in the opposite direction to the way the world is turning and actually stay in one place all the time."

"If the 1,500,000 tons of sulphur mined in Texas annually were in the hands of his satanic majesty, it would solve his fuel problems for eternity."

"Texans could re-salt the Pacific Ocean and still have enough left over to supply the United States until the year 9403."

"I had to come to Texas to learn: That people who cuss Texas love its cussedness; that Texas does not have all the advantages in the world — but does have the biggest half."

"If Texas oil wells were opened to capacity, they would produce more oil in a day than the U. S. could use in a month."

"Many a rancher has raved and ranted when a well on his ranch brought in oil — when it was water for his stock that he needed."

Romantic Texas

The history of Texas is in reality a romance in depicting the struggle of the early days when Texas freed herself from Mexico at the Battle of San Jacinto on April 21, 1836. Sam Houston, Stephen F. Austin, and many of the early Texas statesmen were real individualists, but highly devoted to the purely American ideals of freedom and self-government. We Texans put the Battle of San Jacinto along with the other great decisive battles of the world.

The history of Texas during the early struggle for independence and the development which followed this period is very much a repetition of the history of our own national government. Texas' admission to the Union opened up a vast empire which was later added to the United States. Texas itself is more or less an individualistic state because it was the only state that was admitted to the Union by treaty. In this treaty, the state of Texas kept its own public lands and reserved the right, if it so desired later, to be divided into five separate states. However, a great deal of water has gone over the dam and with the great pride of Texans as it exists today one would be taking his life in his hands almost to suggest such a division.

In climate, in natural resources, in beauty, and certainly in original American attitudes, Texas can offer the best. The educational system in Texas was founded in the early days following the Revolutionary period when Texas gained its independence from Mexico. In fact, in the Declaration of Independence, similar in words and spirit to our own national Declaration of Independence, it reiterated the abuses of the government of Mexico and lamented the lack of schools for the children. One of the early presidents of Texas, Mirabeau B. Lamar, uttered this famous statement which embodies the philosophy of Texas in its attitude toward universal education and freedom:

"Cultivated mind is the guardian genius of democracy. It is the only dictator that freemen acknowledge and the only security that freemen desire."

And in the Declaration of Independence are these words:

". . . it is an axiom, in political science, that unless a people are educated and enlightened it is idle to expect the continuance of civil liberty or the capacity for self-government."

Growth of Public Education

Texas, like most of the western states, has had difficulty in building up efficient school systems, because of the difficulties of the wide expanse in rural areas, but during the past generation, Texas has increased its per capita state aid from five dollars to twenty-nine dollars, which is provided for each student in school districts between the ages of 6 and 17. Texas has a well developed system of higher education. At its peak, is the University of Texas and A. & M. College, and seven Teachers Colleges. Texas has

twenty-three municipally- or county-operated colleges and forty-two junior colleges — ranking third in the U. S. in number. It is indeed an active state in the welfare of its people.

During twenty years of service, I have witnessed the period of greatest development in the educational system. The school systems in the cities of Texas rank high among other cities of similar size in the nation. Houston, the city in which I serve, is known throughout the nation. If one has studied geography recently, he will hardly believe that Houston is the third port in the United States in its tonnage shipments. This port has been developed by means of the Ship Channel which leads to the Gulf of Mexico, some fifty miles away. During the present war period, Houston has ranked among the first cities in ship building and in production of war materials. Its growth has been rapid. In 1920 the population in round numbers was 138,000. In 1944, the estimate in round numbers is 550,000.

Growth of Houston Public Schools

The Houston Independent School District embraces great areas adjoining the city. Many of the common school districts, by the vote of their citizens, have become annexed to the Houston Independent School District.

It is not my purpose to describe in detail the progress of the Houston schools, except in that respect which characterizes the changes through which a school system travels during rapid growth of a twenty-year period. The problems are being met continuously through experiments and practice in an attempt to keep up with the needs in education for the proper development of citizenship. Houston is fortunate to have a citizenry who more and more realize the need for good schools.

In 1924, my initial year in Houston, many pressing problems had to be met. It was a transition from the old 8-4 system to the new system of kindergarten-5-3-3 (only recently has Houston and the State of Texas adopted the twelve-year system with kindergarten-6-3-3). This reorganization, bringing in the system of junior high school, was one of the first problems to be met. Because of the rapid growth of Houston, having in this year more than 7,600 children on double session, it was necessary to begin a large building program which would provide for the expansion of the schools during the following ten or fifteen years. A survey staff was organized and a very comprehensive survey was made for the planning of such a program. Through the recommendations of this survey, fifteen junior high schools, three new senior high schools, and fifty or sixty additional elementary schools were built.

It was my responsibility to direct this survey and make recommendations to the board of education for the new program that must be provided in the reorganization plan, as well as recommend locations for new buildings. The survey set up certain standards. One of these, the type and size of school sites to be provided, has proved a very wise standard in this developing city. Elementary-school sites must have a minimum of five acres; junior high schools, twelve acres; senior high schools, fifteen acres.

In my judgement, the lasting benefit to a community of a superintendent's service comes in his counsel for wise planning in the future development of the schools. To assist in getting the public to accept the large site standards, Houston was fortunate enough to have had a mayor who long before this survey influenced the city counsel to purchase one senior-high-school site consisting of nine acres of ground. Although this radical idea cost the mayor his position in a later election, it proved the wisdom of planning adequate school sites for a growing city. As a result of this survey and plans that were made, Houston has acquired for all its new schools large play areas which are now of great service both to the schools and to the recreational program.

In a growing school system the important consideration is what is being done to improve the chief objectives of public education — to provide an opportunity to acquire an education for all students from the kindergarten through the elementary, junior, and senior high schools, and in those areas beyond which require vocational and technical training for the completion of four years of college work. Although it has had many pressing problems, the citizens of Houston have been willing to expand the schools to keep pace with modern educational trends.

Much attention has been given to the reorganization and revision of the curriculum. Houston was one of the cities that began early to work on the development of units of study providing not only for the fundamentals, but for the integration of study in the classroom with the work of life itself. Many school systems in the country have since patterned their curriculums after this type of organization. Houston has also carried on a continuous plan of in-service training for teachers. Since 1928, none but college graduates, trained in their special fields, have been employed as teachers. Houston boasts that more than 95 per cent of her teachers have acquired this standard of training. Only those teachers long in the system are the exceptions.

Research and a Progressive Philosophy Undergird the System

Changes in purpose, philosophy, and methods of wide-spread research in education have been responsible for progress in the schools during the past twenty years. The war period has created extra burdens in education but Houston has not sacrificed its standards except in a few departments where manpower and trained personnel were not available. The greatest challenge before our schools at the present time is the challenge for renewed efforts to prepare for the post-war period which involves so much new planning and many important changes to meet the needs of proper education for the citizens who must control the life of our nation in this and the next generation.

From time to time in the adminis-

tration of city schools, there should be a period of appraisal, of stock taking, and inventory. This is just what Houston is now planning, and upon the basis of this appraisal, goals and necessary plans will be formulated. Improvements in a school system are made chiefly through the adage, "Plan your work and work your plan." All functions of the school system should be centered in the provision for learning which develops good citizens prepared to add to their country's glory through the services which they contribute.

It is always a problem of securing better trained personnel, more adequate facilities to carry on the program, and enlightened public sentiment for good schools. Without the sympathetic and intelligent support of the citizens, a school system can make little progress. The ultimate measure of the efficiency and value of education is the life service of the one who is educated. The schools can contribute much in the development of worthy living. The results can not be measured by dollars spent, by the number of graduates, or by public demonstration. It is only the values which exhibit themselves in later life that become the true measure of the work of the schools.

A New Challenge

In this day, America is awakened to the world situation. America believes that it can no longer live apart from the great nations of the world. It is, therefore, necessary that education become adjusted for the citizenship which the new world will require. For this reason, the leaders in public education must become militant in their agitation that the school should secure its fair share of high-quality citizens who must be recruited both for in the training schools for future teachers and for the broken ranks in the school systems of today which have been depleted during the war period. Unless public education and its leaders through its citizens can persuade the best in character and in intelligence to take up the profession of teaching, our nation can not longer hold its foremost place in the leadership of nations.

(In the January issue, Dr. Oberholtzer will write about the development of a university within a public school system.)

Welborn . . .

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there is to be an Executive Board elected by the Assembly and an International Secretariat. Provision is made for an Emergency Rehabilitation Fund and an Emergency Rehabilitation Fund Committee. Special provision is made for co-operation of the new organization with existing international organizations and the relationship of the latter to the central organization.

In short, the constitution is very similar to the Food Conference Agreement and the UNRRA Agreement. The status and prospects of this draft constitution are stated by Dr. Turner as follows:

"The American delegation succeeded in having framed and transmitted to the 44 United and Associated Nations a draft constitution of a United Nations Organization for Educational and Cultural Reconstruction. This draft is now before the 44 nations for consideration. Each of those nations is studying that draft, formulating its recommendations, asking for amendments if it chooses, and finally accepting membership. How soon a sufficient number of nations will act favorably upon that draft or make proposals so that a further international consideration may be given to it, I can not say. There does exist a proposal for a temporary international organization to work in the field of educational reconstruction. This agency will operate if certain situations are met. Whether or not that agency, conceived as a temporary one, will be the basis for a permanent one, I do not know because I do not know what action the several governments in the world may take. Today as a result of the work of the delegation there is an actual proposal for the creation of an international organization in the field. Governments have that proposals before them and may act to create an international agency. It probably will not be the permanent organization for which some of you are looking but certainly the step is a movement away from the situation of widespread talk to one where a concrete proposal exists."

In the words of the Preamble of the draft constitution, "To deprive any part of the inter-dependent modern world of the cultural resources, human and material, through which its children are trained and its people informed, is to destroy to that extent the common knowledge and the mutual understanding upon which the peace of the world and its security must rest." If this statement is true, all good citizens and especially teachers should give active support to the program of international education. Intelligent support depends on information. Information on further developments can be obtained from educational and general news periodicals, and news-letters issued occasionally by the Liaison Committee for International Education, 1201 Sixteenth Street, N.W., Washington, 6, D. C.

Noyes . . .

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and responsibility, the student is introduced to the activities of various governmental agencies which aid in providing a healthful environment. A study of vital statistics, of mortality and morbidity tables, gives the ground work for understanding the areas in our modern life which are in need of further scientific study. For groups interested in special phases, courses dealing with a limited field are offered. Some of these offer work in neurology, in the study of animals producing human disease; in the anatomy of special organs such as the ear, larynx, and eye; and in the hygiene of the school child.

It is the hope of this division that these courses offer a diversified presentation of the essentials required for understanding the routine care and attention necessary for the average individual to maintain his body at a relatively efficient working level.